

WHAT IS CLAIMED IS:

1. A process of preparing a coating composition comprising forming a hydrolysis product by hydrolysing:

- 5 (a) at least one compound represented by general formula I,



10 wherein M is an element selected from the group consisting of Si, Ti, Zr, Sn, Ce, Al, B, VO, In and Zn, R' represents a hydrolysable radical, and m is an integer from 2 to 4; and

- (b) optionally at least one compound represented by general formula II,



20 wherein the radicals R' and R are the same or different, R' is as defined above, R represents a group selected from an alkyl group, an alkenyl group, an aryl group, a hydrocarbon group with at least one halogen group, an epoxide group, a glycidyloxy group, an amino group, a mercapto group, a methacryloxy group and a cyano group, and a and b independently of one another have a value from 1 to 3, provided that the sum of a and b is four,

25 wherein the hydrolysis occurs in the presence of at least 0.6 moles of water for every mole of hydrolysable radical R'.

30 2. The process of Claim 1 wherein the hydrolysis is carried out in the presence of 0.8 to 2.0 moles of water for every mole of hydrolysable radical R'.

3. The process of Claim 1 wherein the compound of formula II is present in an amount of less than 0.7 moles, based on 1 mole of the compound of formula I.
- 5 4. The process of Claim 1 wherein the hydrolysis is performed at a pH of less than 6.0.
- 10 5. The process of Claim 1 wherein the solids content of the coating composition prepared is 0.2 to 20 % by weight.
6. The process of Claim 1 wherein the hydrolysis is performed in the presence of a solvent selected from at least one of an alcohol having a boiling point below 120°C and water.
- 15 7. The process of Claim 1 wherein M is selected from the group consisting of Si, Ti, Zr, Sn and Ce, and m is 4.
8. The process of Claim 1 wherein M is selected from the group consisting of Al, B, VO and In, and m is 3.
- 20 9. The process of Claim 1 wherein M is Zn, and m is 2.
10. The process of Claim 1 wherein the hydrolysable radical R' is selected from the group consisting of halogens, C1-4-alkoxy, C6-10-aryloxy, C1-4-acyloxy and alkylcarbonyl.
- 25 11. The process of Claim 1 wherein the compound of formula I is selected from at least one tetraalkoxysilane.
- 30 12. The process of Claim 1 wherein the compound of formula II is selected from at least one of glycidyoxy-propyl-tri-methoxy-silane, methyltriethoxysilane and methacryloxy-propyl-trimethoxysilane.

13. The process of Claim 1 further comprising, after completion of hydrolysis, at least one of:

adding to the hydrolysis product at least one additive selected from the group consisting of flow control agents, dyestuffs, stabilizers and
5 inorganic fillers; and

adjusting the concentration of the hydrolysis product to 0.2 to 10 wt.% by adding at least one of alcohols, alkoxy-alcohols and water to the hydrolysis product.

10 14. The coating composition prepared by the process of Claim 1.

15 15. The coating composition of Claim 14 further comprising at least one flow control agent present in an amount of 0.1 to 10 wt.%.

16. A multilayered article comprising:

(a) a substrate (S);

(b) a scratch-resistant layer (SR) prepared by curing a coating composition comprising a polycondensate prepared from at least one silane having an epoxide group on a non-
20 hydrolysable substituent, said polycondensate being prepared by a sol-gel process, said coating composition optionally further comprising at least one of particles and a curing catalyst selected from Lewis bases, titanium alcoholates, zirconium alcoholates and aluminium
25 alcoholates; and

(c) a top layer (T) prepared by curing the coating composition of Claim 14,

wherein said scratch-resistant layer is interposed between said substrate and said top layer.

30

17. The mulilayered article of Claim 16 wherein said substrate (S) comprises a plastic.

18. The multilayered article of Claim 16 wherein said scratch-resistant layer has a thickness of 0.5 to 30 μm .

19. The multilayered article of Claim 16 wherein said top layer
5 has a thickness of 0.1 to 3.0 μm .

20. The multilayered article of Claim 16 further comprising a primer layer (P), said primer layer being interposed between said substrate and said scratch-resistant layer.

10

21. A process of preparing the multilayered article of Claim 16 comprising the steps of:

- 15
- (a) applying the scratch-resistant layer coating composition to the substrate, and curing partially the applied scratch-resistant layer coating composition under conditions such that the partially cured scratch-resistant layer comprises reactive groups;
 - (b) applying the top layer coating composition to the partially cured scratch-resistant layer; and
 - 20 (c) curing substantially completely the partially cured scratch-resistant layer and the top layer.

22. The process of Claim 21 further comprising drying the partially cured scratch-resistant layer at a temperature of greater than
25 110°C, prior to application of the top layer coating composition.

23. The process of Claim 21 wherein the scratch-resistant layer coating composition comprises at least one flow control agent in an amount of 0.03 to 1.0 wt.%.
30

24. The process of Claim 21 wherein the top layer coating composition is applied at a relative humidity of 50 to 75%.

25. The process of Claim 21 further comprising: curing the scratch-resistant layer;

activating the surface of the cured scratch-resistant layer by treating the surface of the partially cured scratch-resistant layer with at least one of
5 corona treatment and flame treatment; and

applying the top layer coating composition to the surface activated scratch-resistant layer.

26. The process of Claim 21 further comprising applying a primer
10 layer to the substrate prior to application of the scratch-resistant layer coating composition.